

a plurality of devices, each of which is disposed over a mirror which is disposed over a dielectric layer which is disposed over a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a shielding layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said shielding layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate; and

said shielding layer substantially prevents radiant energy incident on said shielding layer at a non-orthogonal angle from substantially passing into said semiconductor substrate.

79. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of devices, each of which is disposed over a mirror which is disposed over a dielectric layer which is disposed over a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a shielding layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said shielding layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate;

said mirrors are formed from a metal layer wherein said metal is selected from the group consisting of Ag, Al and alloys thereof; and

said shielding layer substantially prevents radiant energy incident on said shielding at a non-orthogonal angle from passing into said semiconductor substrate.

80. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector formed and a frame;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films;

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element; and

said substantially nonconductive optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

81. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector formed and a frame;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films;

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element; and

said substantially nonconductive optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

82. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a frame composition disposed along an edge of said first electrode, with said frame composition being composed of optical blocking insulating material for blocking incident light from leaking into said switching element;

said optical blocking material substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film formed; and

a layer of liquid crystal material positioned between said first and second orientation films.

83. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

~~a plurality of switching elements being formed on said substrate;~~

a first electrode connected with said switching element and positioned over said switching element;

a frame composition disposed along an edge of said first electrode, with said frame composition being composed of optical blocking insulating

material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film formed;

a layer of liquid crystal material positioned between said first and second orientation films;

said optical blocking insulating material substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate; and

said optical blocking material is cadmium telluride.

84. -- (Added) A liquid-crystal-display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a frame composition disposed along an edge of said first electrode, with said frame composition being composed of optical blocking insulating material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film formed;

a layer of liquid crystal material positioned between said first and second orientation films;

said optical blocking insulating material substantially prevents radiant energy incident on said non-conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate; and

said optical blocking material is germanium oxide.

85.

(Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

nonconductive optical blocking material formed under said first electrode;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode formed on said second orientation film;

a layer of liquid crystal material positioned between said first and second orientation films; and

said non conductive optical blocking material substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

86.

(Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

an oriented layer of liquid crystal material disposed between said first and second electrodes;

optical blocking means positioned between said first electrode and said circuit element for blocking an incident light from leaking into said circuit element; and

said optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

87. (Add d) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

a frame disposed along the edge of said first electrode, with said frame comprising an optical blocking material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode;

an oriented layer of liquid crystal material positioned between said first and second electrodes; and

said optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

88. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

optical blocking means formed under said first electrode;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode;

an oriented layer of liquid crystal material positioned between said first and second electrodes; and

said optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

89. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a second transparent electrode on which said second orientation film is formed;

an oriented layer of liquid crystal material positioned between said first and second electrodes;

substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element; and

said optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

90. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrat ;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a frame disposed along an edge of said first electrode, with said frame comprising an optical blocking insulating material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a second transparent electrode on which said second orientation film formed;

an oriented layer of liquid crystal material positioned between said first and second electrodes; and

said optical blocking material substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

91. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

nonconductive optical blocking material formed under said first electrode;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector formed on said first electrode;

a second transparent electrode on which said second orientation film is formed;

an oriented layer of liquid crystal material positioned between said first and second electrodes; and

said non conductive optical blocking material substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

92. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

an absorber layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said absorber layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate; and

said absorber layer substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

93. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a reflector layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said reflector layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate; and

said reflector layer substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

94. (Add d) A method of forming a spatial light modulator array comprising the steps of:

forming a plurality of electrical circuits in a semiconductor substrate positioned for interconnecting with subsequently formed liquid crystal devices, respectfully;

forming one or more layers of interconnections above said plurality of electrical circuits;

forming a first dielectric layer over said electrical circuits and said layers of interconnections;

planarizing said first dielectric layer to provide a substantially planar upper surface on said first dielectric layer;

forming an absorber layer, positioned and patterned with respect to subsequently formed liquid crystal devices for shielding said plurality of electrical circuits from ambient light,

forming a second dielectric layer above said patterned absorber layer;

forming studs through said second dielectric layer for electrical connection to subsequently formed mirrors;

forming a plurality of mirrors over said dielectric layer and patterned to form the lower electrode of said plurality of liquid crystal devices, said mirrors overlapping said absorber layer to form a capacitor with respect to said overlapping mirror and to attenuate light traveling between said absorber and said mirror;

forming plurality of spacers positioned in between selected mirrors of said plurality of mirrors;

applying a layer of liquid crystal material;

orienting said layer of liquid crystal material;

forming a top electrode of said plurality of mirrors to form said plurality of liquid crystal devices; and

said absorber layer substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

95. (Added) A method of forming a spatial light modulator array comprising the steps of:

forming a plurality of electrical circuits in a semiconductor substrate positioned for interconnecting with subsequently formed liquid crystal devices, respectfully;

forming one or more layers of interconnections above said plurality of electrical circuits;

forming a first dielectric layer over said electrical circuits and said layers of interconnections;

planarizing said first dielectric layer to provide a substantially planar upper surface on said first dielectric layer;

forming an reflective layer, positioned and patterned with respect to subsequently formed liquid crystal devices for shielding said plurality of electrical circuits from ambient light;

said reflective layer substantially prevents radiant energy incident on said non-conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate;

forming a second dielectric layer above said patterned reflective layer;

forming studs through said second dielectric layer for electrical connection to subsequently formed mirrors;

forming a plurality of mirrors over said dielectric layer and patterned to form the lower electrode of said plurality of liquid crystal devices;

said mirrors overlapping said reflective layer to form a capacitor with respect to said overlapping mirror and to attenuate light traveling between said reflective and said mirror;

forming plurality of spacers positioned in between selected mirrors of said plurality of mirrors;

applying a layer of liquid crystal material;

orienting said layer of liquid crystal material;

forming a top electrode of said plurality of mirrors to form said plurality of liquid crystal devices; and

said mirrors are formed from a metal layer wherein said metal is selected from the group consisting of Ag, Al and alloys thereof.

96. (Added) A liquid crystal display comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said light blocking layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate; and

said light blocking layers substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

97. (Added) A liquid crystal display comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said light blocking region being disposed between said mirrors to decrease ambient light from passing into said semiconductor substrate; and

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

98. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

99. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned over respective mirrors on substrate;

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

100. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned on substrate,

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned between said liquid crystal devices for shielding said plurality of electrical circuits from ambient light; and

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

101. (Add d) A display unit according to anyone of claims 103, 105 or 107, wherein said first substrate has an insulation layer between said reflection electrode and said shading layer to form a holding capacitor.

102. (Added) A display unit according to anyone of claims 103, 105 or 107, wherein said shading layer is comprised of a different material from said reflection electrodes.

103. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned on substrate,

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned between said liquid crystal devices for shielding said plurality of electrical circuits from ambient light;

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate; and

said reflection electrodes are comprised primarily of Al and said shading layer is comprised primarily of a material selected from the group consisting of Ti and TiN and Ti_{0.33}Co_{0.67}.

104. (Added) A display unit according to anyone of claims 103, 105 or 107, wherein said shading layer reflects light to a different direction from said reflection electrodes to exhibit a different reflection characteristic.

105. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned on substrate,

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned between said liquid crystal devices for shielding said plurality of electrical circuits from ambient light;

said light blocking region substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate; and

said reflection electrodes are selected from the group consisting of aluminum and an aluminum alloy.

106. (Added) A display unit according to claim 105, wherein said shading layer is comprised primarily of a material selected from the group consisting of Ti and TiN and Ti_{0.33}Co_{0.67}.

107. (Added) A display unit comprising:

a first substrate comprising a plurality of reflection electrodes with a gap portion formed therebetween, a second substrate opposing said first substrate having a transparent electrode, and a liquid crystal material being put between said first and said second substrates, wherein said first substrate has a shading layer at at least part of said gap portion and wherein said shading layer exhibits a different reflection characteristic from said reflection electrodes, said shading layer substantially prevents radiant energy

incident on said non conductiv optical blocking layer at a non-orthogonal angle from passing into said s miconductor substrate.

108. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films;

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element; and

said substantially nonconductive optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

109. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films;

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element; and

said substantially nonconductive optical blocking means substantially prevents radiant energy incident on said non conductive optical blocking layer at a non-orthogonal angle from passing into said semiconductor substrate.

110. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of devices, each of which is disposed over a mirror which is disposed over a dielectric layer which is disposed over a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a reflector/absorber layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;

said reflector/absorber layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate.

111. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector formed and a frame;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films; and

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.

112. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector formed and a frame;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films; and

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.

113. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a frame composition disposed along an edge of said first electrode, with said frame composition being composed of optical blocking insulating material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film formed; and

a layer of liquid crystal material positioned between said first and second orientation films.

114. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

an oriented layer of liquid crystal material disposed between said first and second electrodes; and

optical blocking means positioned between said first electrode and said circuit element for blocking an incident light from leaking into said circuit element.

115. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

a frame disposed along the edge of said first electrode, with said frame comprising an optical blocking material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode; and

an oriented layer of liquid crystal material positioned between said first and second electrodes.

116. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of circuit elements being formed on said substrate;

a first electrode connected with said circuit element and positioned over said circuit element;

optical blocking means formed under said first electrode;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode; and

an oriented layer of liquid crystal material positioned between said first and second electrodes.

117. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a second transparent electrode on which said second orientation film is formed;

an oriented layer of liquid crystal material positioned between said first and second electrodes; and

substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.

118. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a frame disposed along an edge of said first electrode, with said frame comprising an optical blocking insulating material for blocking incident light from leaking into said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a second transparent electrode on which said second orientation film formed; and

an oriented layer of liquid crystal material positioned between said first and second electrodes.

119. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

an absorber layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said absorber layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate.

120. (Added) A spatial light modulator array for modulating light to form an image comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a reflector layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said reflector layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate.

121. (Added) A method of forming a spatial light modulator array comprising the steps of:

forming a plurality of electrical circuits in a semiconductor substrate position d for interconnecting with subsequently formed liquid crystal devices, respectfully;

forming one or more layers of interconnections above said plurality of electrical circuits;

forming a first dielectric layer over said electrical circuits and said layers of interconnections;

planarizing said first dielectric layer to provide a substantially planar upper surface on said first dielectric layer;

forming an absorber layer, positioned and patterned with respect to subsequently formed liquid crystal devices for shielding said plurality of electrical circuits from ambient light,

forming a second dielectric layer above said patterned absorber layer;

forming studs through said second dielectric layer for electrical connection to subsequently formed mirrors;

forming a plurality of mirrors over said dielectric layer and patterned to form the lower electrode of said plurality of liquid crystal devices, said mirrors overlapping said absorber layer to form a capacitor with respect to said overlapping mirror and to attenuate light traveling between said absorber and said mirror;

forming plurality of spacers positioned in between selected mirrors of said plurality of mirrors;

applying a layer of liquid crystal material;

orienting said layer of liquid crystal material; and

forming a top electrode of said plurality of mirrors to form said plurality of liquid crystal devices.

122. (Added) A liquid crystal display comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking layer positioned and patterned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said light blocking layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate.

123. (Added) A liquid crystal display comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and

said light blocking region being disposed between said mirrors to decrease ambient light from passing into said semiconductor substrate.

124. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;

a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices; and

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light.

125. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned over respective mirrors on substrate;

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices; and

a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light.

126. (Added) A liquid crystal apparatus comprising:

a plurality of liquid crystal devices positioned on substrate,

a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices; and

a light blocking region positioned between said liquid crystal devices for shielding said plurality of electrical circuits from ambient light.

127. (Added) A display unit comprising:

a first substrate comprising a plurality of reflection electrodes with a gap portion formed therebetween, a second substrate opposing said first substrate having a transparent electrode, and a liquid crystal material being put between said first and said second substrates, wherein said first substrate has a shading layer at at least part of said gap portion and wherein said shading layer exhibits a different reflection characteristic from said reflection electrodes.

128. (Added) A display unit according to claim 127, wherein said first substrate has an insulation layer between said reflection electrode and said shading layer to form a holding capacitor.

129. (Added) A display unit according to claim 127, wherein said shading layer is comprised of a different material from said reflection electrodes.

130. (Added) A display unit according to claim 127, wherein said shading layer reflects light to a different direction from said reflection electrodes to exhibit a different reflection characteristic.

131. (Added) A display unit according to claim 127, wherein said shading layer is comprised primarily of a material selected from the group consisting of Ti and TiN and Ti_xN_{0.33}C_{0.67}.

132. (Added) A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor electrically connected with said first electrode and positioned under said first electrode;

an optical reflector;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films; and

a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.

133. (Added) A liquid crystal display apparatus for displaying an image, comprising:
- a substrate;
 - a plurality of switching elements being formed on said substrate;
 - a first electrode connected with said switching element and positioned over said switching element;
 - a storage capacitor electrically connected with said first electrode and positioned under said first electrode;
 - an optical reflector;
 - a first orientation film formed on said optical reflector;
 - a second orientation film spaced apart from said first orientation film;
 - a second transparent electrode on which said second orientation film is formed;
 - a layer of liquid crystal material positioned between said first and second orientation films; and
- a substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.